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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/721,928	11/24/2003	Christopher M. Anderson	091-0204	8347
27431 7590 04/06/2007 SHIMOKAJI & ASSOCIATES, P.C. 8911 RESEARCH DRIVE IRVINE, CA 92618			EXAMINER BELL, BRUCE F	
			ART UNIT	PAPER NUMBER
			1746	

SHORTENED STATUTORY PERIOD OF RESPONSE	MAIL DATE	DELIVERY MODE
3 MONTHS	04/06/2007	PAPER

**Please find below and/or attached an Office communication concerning this application or proceeding.**

If NO period for reply is specified above, the maximum statutory period will apply and will expire 6 MONTHS from the mailing date of this communication.

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**Office Action Summary**

Application No.

10/721,928

Applicant(s)

ANDERSON, CHRISTOPHER M.

Examiner

Bruce F. Bell

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

- 1) ☐ Responsive to communication(s) filed on \_\_\_\_.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

- 4) ☒ Claim(s) 1-34 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_ is/are withdrawn from consideration.
- 5) ☒ Claim(s) 18-21 is/are allowed.
- 6) ☒ Claim(s) 1-4, 6, 10, 12, 13, 15, 22-28 and 30-34 is/are rejected.
- 7) ☒ Claim(s) 5, 7-9, 11, 14, 16, 17 and 29 is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_ are subject to restriction and/or election requirement.

**Application Papers**

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 24 November 2003 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

**Priority under 35 U.S.C. § 119**

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some \* c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

**Attachment(s)**

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO/SB/08)  
Paper No(s)/Mail Date \_\_\_\_.
- 4) ☐ Interview Summary (PTO-413)  
Paper No(s)/Mail Date. \_\_\_\_.
- 5) ☐ Notice of Informal Patent Application
- 6) ☐ Other: \_\_\_\_.

## DETAILED ACTION

### ***Claim Rejections - 35 USC § 103***

1. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

2. Claims 1, 6, 10, 12, 13, 28, 30 are rejected under 35 U.S.C. 103(a) as being unpatentable over Duffy et al (2004/0072040).

Duffy et al disclose an energy storage system having a first pressurized tank for carrying water and hydrogen gas and a second pressurized tank for carrying water and oxygen gas. A first output line connects to the pressurized tank for carrying hydrogen gas from the tank. A second output line connects to the second pressurized tank for carrying oxygen gas from the second tank. The energy storage system has a differential pressure relief valve connected to the output lines to maintain the gases within a defined pressure differential. A water line connects to both pressurized tanks for maintaining relative water levels in the tanks. An electrolyzer is maintained under pressure and receives water from at least one of the pressurized tanks and creates hydrogen gas and oxygen gas for storage in the pressurized tanks. A solar array is connected to the electrolyzer in the regeneration system. See abstract. The system has a first pressurized storage tank for holding hydrogen gas and a second pressurized storage tank for holding oxygen gas. A circulating pump is used to control the relative

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water levels. See paragraph [0032]. The regenerative electrolyzer/fuel cell converts hydrogen gas that the fuel cell receives through an output line and the oxygen received from another output line into electrical energy that can be used by various devices, such as electrical lighting, refrigeration systems, motors and other known uses for electricity. The fuel cell creates water as a byproduct and is returned to the pressurized tanks. See paragraph [0034]. The regenerative electrolyzer/fuel cell has an energy source such as that of a solar photovoltaic, solar thermal, geothermal or other electrical generator that creates an electrical current. This electrical current is sent to an electrolyzer, wherein the electrolyzer uses the electricity to generate hydrogen gas and oxygen gas under pressure from the water. The hydrogen gas is piped from the electrolyzer through a hydrogen line to the hydrogen tank and the oxygen is piped via an oxygen line to the second pressurized tank. See paragraph [0035]. The pressurized tank has a pressure cylinder and a pair of plates with a bottom plate at one end and a top plate at the other end. The plates each have an annular groove for receiving an o-ring to seal the plates relative to the pressure cylinder. The plates are retained against the pressure cylinder by a plurality of threaded bolts that extend through holes in the plates and are held in compression using nuts and washers. See paragraph [0037]. The motors are run on 24V DC, to facilitate use of solar power to run the system. See paragraph [0042]. The electrolyzer receives power from an electrical cord that passes through one of the ports of the top plate. See paragraph [0042]. Placing of the electrolyzer in the pressurized tank allows the electrolyzers ambient pressure to be matched continuously with that of

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the fluid within the electrolyzer, entirely eliminating pressure differences across the seals. See paragraph [0046].

Duffy et al does not disclose a solar panel or a hermetically sealed compressor that is connected with the electrolysis unit and the hermetically sealed compressor receiving hydrogen gas from the electrolysis unit with the hydrogen tank being connected with the compressor.

The subject matter as a whole would have been obvious to one having ordinary skill in the art at the time the instant invention was made because even though the prior art of Duffy et al does not explicitly disclose a solar panel or a hermetically sealed compressor receiving hydrogen gas from the electrolysis unit with the hydrogen tank being connected with the compressor, the prior art of Duffy et al does disclose the use of a solar photovoltaic cell which one having ordinary skill in the art would understand includes some kind of solar panel. Further, the electrolyzer of Duffy et al being included in the hydrogen pressure tank along with the water with the entire system being under pressure, would be the same as being connected individually (separate versus integrally). One having ordinary skill in the art based on the teaching of Duffy et al would understand the principles with respect to using the system of Duffy et al versus connecting the individual components together to form the system. Therefore, the prior art of Duffy et al renders the applicants instant invention obvious for the reasons set forth above.

***Claim Rejections - 35 USC § 103***

3. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

4. Claims 2-4, 10, 13, 15, 22-27, 28, 30-34 are rejected under 35 U.S.C. 103(a) as being unpatentable over Duffy et al (2004/0072040) in combination with Routtenberg et al (2004/0205032).

Duffy et al is as disclosed above in the 35 USC 103 rejection above.

Duffy et al does not disclose the use of AC or the use of a system controller.

Routtenberg et al discloses an energy delivery system for a regenerative fuel cell. The system makes use of a power converter that is constructed to function in inverse mode, as an AC to DC power converter or a DC to AC power converter, without appreciable adding to its size. Such a device, which can switch its mode of operation under software control, eliminates the need for an additional system to convert external AC current to DC current to power the electrolytic process. See paragraph 0069.

Routtenberg et al further discloses the system being used in vehicles.

The subject matter as a whole would have been obvious to one having ordinary skill in the art at the time the instant invention was made to have used dual sources of energy to the electrolytic cell, since Routtenberg discloses that it is known to use a converter to convert the energy from either AC to DC or DC to AC and not increase the size of the system. Further, it would have been within the ability of the person having

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ordinary skill in the art to have used said converter in the system to enable the system to have an alternate source of energy in case the solar system failed due to excessive non sunny days which are required to make the energy needed in a solar system.

Therefore, the prior art of Duffy et al in combination with Routtenberg et al renders the applicants instant invention obvious for the reasons set forth above.

### ***Claim Objections***

5. Claims 8, 9, 14, 16, 17 are objected to under 37 CFR 1.75(c), as being of improper dependent form for failing to further limit the subject matter of a previous claim. Applicant is required to cancel the claim(s), or amend the claim(s) to place the claim(s) in proper dependent form, or rewrite the claim(s) in independent form.

Claims 8, 9 and 14 refer to the electrolyte and the pH thereof. In an apparatus claim, the electrolyte is not considered to be a part of the apparatus, but instead is a material to be worked upon, unless, the system is shown to be a closed or sealed system and needs to be set forth as such in the instant claims. Claims 16 and 17 do not further limit the solar electrolysis power source, instead the claims only recite the power sources intended use in an automobile or portable power tool. This does not further limit the power source, since the vehicle or portable power tool is not a part of the power source.

### ***Allowable Subject Matter***

6. Claims 5, 7, 11, 18-21 are allowable over the prior art of record.

7. Claims 5, 7, 11 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

8. The following is a statement of reasons for the indication of allowable subject matter: The prior art of record fails to teach and/or suggest the used of a pH sensor; water level sensor in a solar electrolysis power source as set forth having also a fuel cell.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Bruce F. Bell whose telephone number is 571-272-1296. The examiner can normally be reached on Monday-Friday 6:30 AM - 3:00 PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Michael Barr can be reached on 571 272-1414. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.


Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.



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BFB  
March 30, 2007

  
Bruce F. Bell  
Primary Examiner  
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